

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT STATIONARY SOURCE COMPLIANCE DIVISION PERMIT APPLICATION PROCESSING AND CALCULATIONS	PAGES 11	PAGE 1
	APPL NO 480859 & 480864	DATE 4/27/10
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Permit to Construct (Alteration/Modification)

Applicant Eastern Municipal Water District (EMWD) –Temecula Valley
Regional Water Reclamation Facility (TVRWRF)

Mailing Address 2270 Trumble Road,
P.O. Box 8300
Perris, CA 92572

Equipment Location 42565 Avenida Alvarado
Temecula, CA 92590

Equipment Description
APPLICATION 480859, FACILITY ID 001703

INTERNAL COMBUSTION ENGINE, NON-EMERGENCY, WAUKESHA, MODEL H24 GLD, SPARK IGNITION, FOUR CYCLE, 8-CYLINDER, 530 BHP, LEAN BURN, TURBOCHARGED, AFTERCOOLED, FUELED WITH DIGESTER GAS, OR DIGESTER GAS/ NATURAL GAS/ AIR BLEND, ALL FUEL BLENDS WITH AN EQUIVALENT HEATING VALUE OF DIGESTER GAS, WITH AN EXHAUST HEAT RECOVERY SYSTEM, AND AN AIR-TO-FUEL RATIO CONTROLLER, WAUKESHA, MODEL CEC, DRIVING AN BLOWER.

APPLICATION 480864, FACILITY ID 001703

INTERNAL COMBUSTION ENGINE, NON-EMERGENCY, WAUKESHA, MODEL H24 GLD, SPARK IGNITION, FOUR CYCLE, 8-CYLINDER, 530 BHP, LEAN BURN, TURBOCHARGED, AFTERCOOLED, FUELED WITH DIGESTER GAS, OR DIGESTER GAS/ NATURAL GAS/ AIR BLEND, ALL FUEL BLENDS WITH AN EQUIVALENT HEATING VALUE OF DIGESTER GAS, WITH AN EXHAUST HEAT RECOVERY SYSTEM, AND AN AIR-TO-FUEL RATIO CONTROLLER, WAUKESHA, MODEL CEC, DRIVING AN BLOWER.

Background/Process Description

The above applications were submitted on April 2, 2009 as a Proposed Alteration/Modification to Permitted Equipment application type for identical non-emergency digester gas fueled engines to drive 8000 cfm aeration blowers. The existing permits for A/N 480859 and 480864 are A/N 485849, Permit G5390 and A/N 485850, Permit G5391, respectfully, granted on December 10, 2009 under Title V permit Revision 1 of Section D.

The facility is a municipal water district which accepts and treats municipal sewage at Eastern Municipal Water District-Temecula Valley Regional Water Reclamation Facility (EMWD-TVRWRF). These engines (along with another permitted natural gas ICE equipped with non-selective catalytic reduction (NSCR)) are used as the only source of air to the aeration tanks at the facility. The current wastewater influent throughput for the facility is 18 million gallons per day (MGD). There is no school within 1000 feet of emission source. No violations have been issued and no complaints have been received against the facility in the past 4 years.

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The proposed alteration is for approval to burn more than 10% natural gas in the two digester gas-fired engines at the above facility according to Rule 1110.2 (d)(1)(C). Currently, these engines are permitted to combust digester gas and a blend of natural gas/air as a secondary fuel with an equivalent heating value of the digester gas only when the supply of digester gas is insufficient to operate the engine. EMWD also operates an enclosed flare, 18 mmBtu/hr, (A/N 415794, Permit G5398) that can burn excess digester gas that is not used in the digester gas fired engines. Although, the facility has been shutting down the engines and flaring the digester gas when necessary to be in compliance with the 10% natural gas limit of Rule 1110.2.

When the facility was not restricted in its use of digester gas/natural gas the operational practice was to operate one digester gas-fired engine primarily on digester gas, operate the rich burn, NSCR natural gas fired only engine and combust any excess any digester gas in the flare. Or when operating both digester gas fired engines, split the digester gas between the two engines and supplement with the natural gas/air blended fuel as needed. This operational scenario allows for one of the digester gas engines to serve as a back-up engine in the event of engine failure or the need to take the primary engine out of service for maintenance or repair.

When these applications were submitted (April 2008) the sewage treatment plant was processing an average of 14 MGD, which produced digester gas averages between 185,000 and 210,000 cubic feet per day (109.34 mmBtu per day and 124.11 mmBtu per day). In 2009 the average digester gas produced was between 130,000 and 205,000 cubic feet per day. Maintenance events occur at the facility that could limit the available digester gas produced to as low as 75% of normal production levels. For example, one of the digester units may be removed for service, which may affect the digester gas production for up to 6 weeks. The reduction of digester gas production would require a variance to keep the plant functioning. The table below shows the digester gas production in 2009 and the calculated excess of digester gas when operating one or two engines at 100% and 90% digester gas usage.

Digester Gas Data - Temecula Valley Regional Water Reclamation Facility

2009	Amount Produced			One Engine		Two Engines	
				100% DG	90% DG	100% DG	90% DG
				7800 cf/hr	7020 cf/hr	15,600 cf/hr	14,040 cf/hr
Month	cf/month	cf/day	cf/hour	Excess DG cf/hr		Excess DG cf/hr	
Jan	5,102,118.4	164,584.5	6,857.7	-942.3	-162.3	-8742.3	-7182.31
Feb	5,052,274.0	180,438.4	7,518.3	-281.7	498.3	-8081.7	-6521.74
Mar	5,798,338.9	187,043.2	7,793.5	-6.5	773.5	-7806.5	-6246.53
Apr	5,756,269.5	191,875.7	7,994.8	194.8	974.8	-7605.2	-6045.18
May	6,272,146.6	202,327.3	8,430.3	630.3	1,410.3	-7169.7	-5609.70
Jun	5,789,065.1	192,968.8	8,040.4	240.4	1,020.4	-7559.6	-5999.63
Jul	4,821,268.7	155,524.8	6,480.2	-1,319.8	-539.8	-9119.8	-7559.80
Aug	4,681,712.1	151,023.0	6,292.6	-1,507.4	-727.4	-9307.4	-7747.38
Sep	4,160,174.3	138,672.5	5,778.0	-2,022.0	-1,242.0	-9822.0	-8261.98
Oct	4,127,446.1	133,143.4	5,547.6	-2,252.4	-1,472.4	-10052.4	-8492.36
Nov	4,452,346.6	148,411.6	6,183.8	-1,616.2	-836.2	-9416.2	-7856.19
Dec	5,077,771.3	163,799.1	6,825.0	-975.0	-195.0	-8775.0	-7215.04

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Fuel consumption for one engine: $130 \text{ cfm} = 7,800 \text{ cf/hr} = 187,200 \text{ cf/day}$

Digester gas: 591 Btu/scf

DG Btu/hr = $591 \text{ Btu/scf} \times 7,800 \text{ cf/h} = 4,609,800 \text{ Btu/hr}$

90% DG Btu/hr = $4,609,800 \times 90\% = 4,148,820 \text{ Btu/hr}$

DG cf/hr (at 90%) = $4,148,820 \text{ Btu/hr} / 591 \text{ Btu/scf} = 7,020 \text{ cf/hr}$

10% DG Btu/hr = $4,609,800 \text{ Btu/hr} \times 10\% = 460,980 \text{ Btu/hr}$

NG cf/hr (at 10%) = $460,980 \text{ Btu/hr} / 1050 \text{ Btu/scf} = 439 \text{ cf/hr}$

The production of digester gas during 2009 indicate that using 90-100% digester gas and 10% natural gas or less would require the prime-use engines to be shut down and the digester gas to be flared. The digester gas production during April through June is in excess for one engine at 100% digester gas and insufficient during July to March. The digester gas production during February through June is in excess for one engine at 90% digester gas and insufficient during July to January. When operating two engines operating at 90-100% digester gas there is insufficient digester gas being produced. In order to ensure consistent operation of the aeration blowers at the sewage treatment plant, two of the three engines shall be operational at all times. Since the only alternative to limiting natural gas usage to 10% would be shutting down the digester gas engines and flaring digester gas, it is recommended that these two engines be allowed greater than 10% natural gas usage in these two digester gas engines.

Digester gas usage by percentage of total heat input

Digester gas shall supply 50% of total heat input (based on higher heating value) to the engine. This ensures that if the amount of digester gas available is more than the amount required by one engine, the digester gas shall be split between the engines.

Fuel consumption of digester gas for one engine = 7,800 cfh

Digester gas heating value = 591 Btu/scf

Total heat rating for the engine = $591 \text{ Btu/scf} \times 7,800 \text{ cf/hr} = 4,609,800 \text{ Btu/hr}$

50% of Total Heat Input DG = $4,609,800 \times 50\% = 2,304,900 \text{ Btu/hr}$

DG cf/hr (at 50%) = $2,304,900 \text{ Btu/hr} / 591 \text{ Btu/scf} = 3,900 \text{ cf/hr}$

50% of Total Heat Input NG = $4,609,800 \text{ Btu/hr} \times 50\% = 2,304,900 \text{ Btu/hr}$

NG cf/hr (at 50%) = $2,304,900 \text{ Btu/hr} / 1050 \text{ Btu/scf} = 2,195 \text{ cf/hr}$

Digester gas usage by volume

$3,900 \text{ cfh} / (3,900 \text{ cfh} + 2,195 \text{ cfh}) = 64\%$

This value is only applicable for digester gas that has a heating value of 591 Btu/scf.

Emissions

May 3, 2006, Horizon Air Measurement Services, Inc. had conducted source tests for the two engines using two (2) different fuels (digester gas and natural gas). Source test results summary is shown below. In order to provide operating flexibility using any of the fuel or fuel blends tested and remain in compliance with the applicable rules, staff had decided to consider the maximum emission rates for the worst case scenario.

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Source Test Results: Horizon Air Measurement Services, Inc. Source Test date May 3, 2006, Report E26-048-FRA.

Pollutant	Digester gas (DG) A/N 480859	Natural gas (NG) A/N 480859	Digester gas (DG) A/N 480864	Natural gas (NG) A/N 480864
CO, lbs/hr	1.447	1.23	1.98	1.67
CO, ppmv @ 15% O ₂	143.8	123.9	143.2	138.2
NOx, lbs/hr	0.385	0.34	0.372	0.528
NOx ppmv @ 15% O ₂	27.4	26.8	16.5	30.5
TNMOC, lbs/hr	0.1102	0.2247	0.1661	0.2389
TNMOC, ppmv (as carbon) @ 15% O ₂	19.9	38.0	36.5	34.5
Stack flow rate, dscfm	963	1073	1346	1256
Oxygen %	6.95	7.34	7.06	7.39
Fuel Usage, scfh	7614	6981	7705	6870

Since the two engines are identical, the maximum emission rate between both engines shall be used for both engines. The bold values indicate the maximum emissions and/or flow rates of the source test.

Assume Source Test was conducted at maximum achievable firing rates and power outputs (530 bhp) as indicated in Source Test Tables 2-1 through 2-4.

CO emissions

Previous permitted emission: = **2.42 lbs/hr** = **58 lb/day (NSR)**

Emission based on Source Test: 1.98 lbs/hr = 1.98 lbs/hr = 47.52 lbs/day

BACT requirement: 2.5 g/bhp-hr

2.5g/bhp-hr x 530 bhp x 1lb/453.6g = 2.92 lbs/hr = 70.08 lbs/day

Rule 1110.2 requirement: 2000 ppmvd @ 15% O₂ > 143.8 ppmv @ 15% O₂ (from Source Test)

NOx emissions

Previous permitted emission: = **0.70 lbs/hr** = **17 lb/day (NSR)**

Emission based on Source Test: 0.528 ~ 0.53 lbs/hr = 0.53 lbs/hr = 12.72 lbs/day

BACT requirement: 0.60 g/bhp-hr

0.60g/bhp-hr x 530 bhp x 1lb/453.6g = 0.70 lbs/hr = 16.80 lbs/day

Rule 1110.2 requirement: 36 ppmvd @ 15% O₂ > 30.5 ppmv @ 15% O₂ (from Source Test)

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PM10 emissions

Previous permitted emission: = **0.04 lbs/hr** = **1 lb/day (NSR)**

ROG emissions

Previous permitted emission: = **0.29 lbs/hr** = **7 lb/day (NSR)**

Emission based on Source Test: 0.2389 ~ 0.24 lbs/hr = 0.24 lbs/hr = 5.76 lbs/day

BACT requirement: 0.80 g/bhp-hr

0.8g/bhp-hr x 530 bhp x 1lb/453.6g = 0.93 lbs/hr = 22.32 lbs/day

Rule 1110.2 requirement: 250 ppmvd as carbon @ 15% O2 > 38 ppmv as carbon @ 15% O2

SOx emissions

Previous permitted emission: = **0.0 lbs/hr** = **0 lb/day (NSR)**

BACT requirement: Rule 431.1 compliance: 1) Facility wide emission < 5 lbs/day

1) 5 lbs/day H2S x lb-mole/34.08 lbsH2S x 64.07 lbsSOx/lb-mole = 9.40 lbs/day SOx (as SO2)
= 0.39 lbs/hr SOx (as SO2)

Annual Emissions (AER 2009) SOx emission: 0.416 tons/yr

0.416 tons/yr x 2000lbs/ton x 1yr/365days = 2.28 lbs/day SOx
= 0.095 lbs/hr SOx

Toxic Risk Analysis for A/N 480859

Nearest Residential Receptor Distance: 6000 ft. (1829 m)

Nearest Commercial Receptor Distance: 700 ft. (213 m)

Stack height: 24.1 ft. (7.35 m)

Stack inner diameter: 10.0 in. (0.25 m)

Rain cap: Yes

Exhaust flow rate: 3500 acfm

Compound	MW (lbs/lbmole)	Outlet emission (lb/hr)
Acetaldehyde	44.06	1.60E-4
Benzene	78.11	5.08E-4
Benzylchloride	126.58	1.42E-5
Carbon tetrachloride	153.24	4.30E-6
Chlorobenzene	112.56	3.16E-6
Chloroform	119.38	3.32E-6
1,2-Dibromoethane	187.88	5.28E-6
1,4-Dichlorobenzene	147.01	1.03E-5
1,1-Dichloroethane	98.96	2.76E-6
1,2-Dichlorethane	98.96	2.76E-6

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1,1-Dichloroethylene	96.95	2.71E-6
Dichloromethane (Methylene chloride) ¹	84.94	2.85E-5
Ethyl benzene	106.16	5.09E-5
Ethyl chloride	64.52	1.82E-6
Formaldehyde	30.03	6.63E-4
Trichlorofluoromethane (CFC-11)	137.37	3.83E-6
Trichlorotrifluoroethane (CFC-113)	187.38	4.78E-6
Dichlorodifluoromethane (CFC-12)	120.91	3.38E-6
Hexachlorobutadiene	260.76	1.44E-5
Methyl bromide	94.95	2.65E-6
Styrene	104.16	6.83E-6
1,1,2,2-Tetrachloroethane	167.86	4.69E-6
Tetrachloroethylene (PCE) ¹	165.83	4.58E-6
Toluene	92.13	4.34E-4
1,1,1-Trichloroethane ¹	133.42	3.71E-6
1,1,2-Trichloroethane	133.42	3.71E-6
Trichloroethylene (TCE)	130.40	3.66E-6
Vinyl Chloride	62.50	1.76E-6
m/p-Xylene	106.17	7.40E-5
o-Xylene	106.18	1.72E-5

The emission rates for the toxic air contaminants (TACs) were the maximum emission rates from the August 2002 source test.

¹ Exempt compounds that are not considered as VOCs by Rule 102.

Tier III analysis was used since the exhaust stack does have a rain cap. Tier III risk analysis was based on the emission rates listed in the above table. The MICR values are determined to be 5.13×10^{-9} for residential and 4.67×10^{-9} for commercial receptors. Maximum MICR is determined to be 2.16×10^{-7} for residential and 4.22×10^{-8} for commercial receptors with a distance of 12m from the exhaust stack. HIA and HIC were less than 1. Cancer Burden was less than 0.5.

Toxic Risk Analysis for A/N 480864

Nearest Residential Receptor Distance:	6000 ft. (1829 m)
Nearest Commercial Receptor Distance:	700 ft. (213 m)
Stack height:	27.5 ft. (8.38 m)
Stack inner diameter:	8 in. (0.20 m)
Rain cap:	Yes
Exhaust flow rate:	3160 acfm

Compound	MW (lbs/lbmole)	Outlet emission (lb/hr)
Acetaldehyde	44.06	1.60E-4
Benzene	78.11	5.08E-4
Benzylchloride	126.58	1.42E-5
Carbon tetrachloride	153.24	4.30E-6

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Chlorobenzene	112.56	3.16E-6
Chloroform	119.38	3.32E-6
1,2-Dibromoethane	187.88	5.28E-6
1,4-Dichlorobenzene	147.01	1.03E-5
1,1-Dichloroethane	98.96	2.76E-6
1,2-Dichloroethane	98.96	2.76E-6
1,1-Dichloroethylene	96.95	2.71E-6
Dichloromethane (Methylene chloride) ¹	84.94	2.85E-5
Ethyl benzene	106.16	5.09E-5
Ethyl chloride	64.52	1.82E-6
Formaldehyde	30.03	6.63E-4
Trichlorofluoromethane (CFC-11)	137.37	3.83E-6
Trichlorotrifluoroethane (CFC-113)	187.38	4.78E-6
Dichlorodifluoromethane (CFC-12)	120.91	3.38E-6
Hexachlorobutadiene	260.76	1.44E-5
Methyl bromide	94.95	2.65E-6
Styrene	104.16	6.83E-6
1,1,2,2-Tetrachloroethane	167.86	4.69E-6
Tetrachloroethylene (PCE) ¹	165.83	4.58E-6
Toluene	92.13	4.34E-4
1,1,1-Trichloroethane ¹	133.42	3.71E-6
1,1,2-Trichloroethane	133.42	3.71E-6
Trichloroethylene (TCE)	130.40	3.66E-6
Vinyl Chloride	62.50	1.76E-6
m/p-Xylene	106.17	7.40E-5
o-Xylene	106.18	1.72E-5

The emission rates for the toxic air contaminants (TACs) were the maximum emission rates from the August 2002 source test.

¹ Exempt compounds that are not considered as VOCs by Rule 102.

Tier III analysis was used since the exhaust stack does have a rain cap. Tier III risk analysis was based on the emission rates listed in the above table. The MICR values are determined to be 5.14×10^{-9} for residential and 4.86×10^{-9} for commercial receptors. Maximum MICR is determined to be 1.20×10^{-7} for residential and 2.34×10^{-8} for commercial receptors with a distance of 18m from the exhaust stack. HIA and HIC were less than 1. Cancer Burden was less than 0.5.

Emissions Summary

Facility totals (based on NSR lbs/day values)

A/N 480859 (ICE (>500HP) N-Em Stat Other Fuel)

CO	= 2.42 lbs/hr	= 58 lbs/day	= 21141.12 lbs/year	= 10.57 tons/year
NOx	= 0.70 lbs/hr	= 17 lbs/day	= 6115.20 lbs/year	= 3.06 tons/year
PM10	= 0.04 lbs/hr	= 0.97 lbs/day	= 349.44 lbs/year	= 0.17 tons/year
ROG	= 0.29 lbs/hr	= 7 lbs/day	= 2533.44 lbs/year	= 1.27 tons/year
SOx	= 0 lbs/hr	= 0 lbs/day	= 0 lbs/year	= 0 tons/year

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A/N 480864 (ICE (>500HP) N-Em Stat Other Fuel)

CO	= 2.42 lbs/hr	= 58 lbs/day	= 21141.12 lbs/year	= 10.57 tons/year
NOx	= 0.70 lbs/hr	= 17 lbs/day	= 6115.20 lbs/year	= 3.06 tons/year
PM10	= 0.04 lbs/hr	= 0.97 lbs/day	= 349.44 lbs/year	= 0.17 tons/year
ROG	= 0.29 lbs/hr	= 7 lbs/day	= 2533.44 lbs/year	= 1.27 tons/year
SOx	= 0 lbs/hr	= 0 lbs/day	= 0 lbs/year	= 0 tons/year

Facility Total (all applications)

CO	= 4.84 lbs/hr	= 116 lbs/day	= 42282.24 lbs/year	= 21.14 tons/year
NOx	= 1.40 lbs/hr	= 34 lbs/day	= 12230.4 lbs/year	= 6.12 tons/year
PM10	= 0.08 lbs/hr	= 1.94 lbs/day	= 698.88 lbs/year	= 0.35 tons/year
ROG	= 0.58 lbs/hr	= 14 lbs/day	= 5066.88 lbs/year	= 2.53 tons/year
SOx	= 0 lbs/hr	= 0 lbs/day	= 0 lbs/year	= 0 tons/year

Previous Facility Total (based on NSR lbs/day values)

A/N 485849 (ICE (>500HP) N-Em Stat Other Fuel)

CO	= 2.42 lbs/hr	= 58 lbs/day	= 21141.12 lbs/year	= 10.57 tons/year
NOx	= 0.70 lbs/hr	= 17 lbs/day	= 6202.56 lbs/year	= 3.10 tons/year
PM10	= 0.04 lbs/hr	= 1 lbs/day	= 349.44 lbs/year	= 0.17 tons/year
ROG	= 0.29 lbs/hr	= 7 lbs/day	= 2533.44 lbs/year	= 1.27 tons/year
SOx	= 0 lbs/hr	= 0 lbs/day	= 0 lbs/year	= 0 tons/year

A/N 485850 ICE (>500HP) N-Em Stat Other Fuel)

CO	= 2.42 lbs/hr	= 58 lbs/day	= 21053.76 lbs/year	= 10.53 tons/year
NOx	= 0.70 lbs/hr	= 17 lbs/day	= 6115.2 lbs/year	= 3.06 tons/year
PM10	= 0.04 lbs/hr	= 1 lbs/day	= 349.44 lbs/year	= 0.17 tons/year
ROG	= 0.29 lbs/hr	= 7 lbs/day	= 2533.44 lbs/year	= 1.27 tons/year
SOx	= 0 lbs/hr	= 0 lbs/day	= 0 lbs/year	= 0 tons/year

Facility Total (all applications)

CO	= 4.83 lbs/hr	= 116 lbs/day	= 42194.88 lbs/year	= 21.10 tons/year
NOx	= 1.40 lbs/hr	= 34 lbs/day	= 12317.76 lbs/year	= 6.16 tons/year
PM10	= 0.08 lbs/hr	= 2 lbs/day	= 698.88 lbs/year	= 0.35 tons/year
ROG	= 0.58 lbs/hr	= 14 lbs/day	= 5066.88 lbs/year	= 2.53 tons/year
SOx	= 0 lbs/hr	= 0 lbs/day	= 0 lbs/year	= 0 tons/year

Facility Emission Increase (based on NSR lbs/day values)

CO	= 0 lbs/hr	= 0 lbs/day
NOx	= 0 lbs/hr	= 0 lbs/day
PM10	= 0 lbs/hr	= -0.06 lbs/day
ROG	= 0 lbs/hr	= 0 lbs/day
SOx	= 0 lbs/hr	= 0 lbs/day

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Rules Evaluation

- Rule 212: Rule 212 (c)(1)- There is no school within 1000 feet of the facility.
Rule 212 (c)(2)- On-site emission increases does not exceed the following:
- | | |
|----------------------------|-------------|
| Volatile Organic Compounds | 30 lbs/day |
| Nitrogen Oxides | 40 lbs/day |
| PM10 | 30 lbs/day |
| Sulfur Dioxide | 60 lbs/day |
| Carbon Monoxide | 220 lbs/day |
| Lead | 3 lbs/day |
- Rule 212(c)(3)(A)(i)- MICR is below 1 in a million.
Public Notice is not required.
- Rule 401: Visible Emissions
No violations are expected, limits are listed under Rule 401(b)(1).
- Rule 402: Nuisance
Nuisance is not expected with proper operation, monitoring and maintenance. Based on previous operation of the facility for the last two years, compliance is expected. No complaints have been received in the last four years against the facility.
- Rule 404: Particulate Matter
No violations are expected limits are listed under Rule 404 Table 404(a).
- Rule 407: Liquid and Gaseous Air Contaminants
Rule 407 (a)(1)- CO exceeding 2000 ppmv (dry averaged over 15 consecutive minutes).
Rule 407 (a)(2)- SOx exceeding 500 ppmv (standard conditions).
Compliance can be expected.
Rule 407 (b)- Provisions of this rule shall not apply to emissions from stationary ICEs.
- Rule 409: Combustion Contaminants
Provisions of this rule shall not apply to emissions from ICEs.
- Rule 431.1: Sulfur Content of Gaseous Fuels
Rule 431.1(g)(8)- Any facility which emits less than 5 pounds per day total sulfur compounds, calculated as H2S from the burning of gaseous fuels other than natural gas.
Compliance is expected.
- Rule 53A: San Bernardino County – Specific Contaminants (more stringent than Rule 53).
(Contained in Addendum to Reg IV)
Rule 53 (a)- Sulfur compound emission, as SO₂ 500 ppmv.
Rule 53 (b)- Combustion contaminants 0.1 gr/cf at 12% CO₂ (standard conditions).
Compliance can be expected based on other similar category ICE permits issued in SCAQMD.
- Reg IX: Standards of Performance for New Stationary Sources
Part 60, Chapter I, Title 40 of Code of Federal Regulations, Subpart JJJJ Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

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60.4230-Applicability: not applicable.

60.4230(a)- Construction for this ICE did not commence nor was the ICE reconstructed after June 12, 2006.

60.4230(b)-This ICE is not being tested at an engine test cell/stand.

60.4230(f)- This ICE is not a temporary unit.

Reg IX: Part 63, Chapter I, Title 40 of Code of Federal Regulations, Subpart ZZZZ- National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

63.6585(a)- Applicability: Applicable.

63.6590(b)(3)- The engine is an existing stationary RICE that is not required to meet the requirements of this subpart and of subpart A of this part.

Rule 1110.2: Emissions From Gaseous and Liquid-Fueled Engines

Rule 1110.2(d)(1)(C)- Digester gas fired engines shall not exceed 36 x ECF ppmvd of NO_x, 250 x ECF ppmvd of VOC and 2000 ppmvd of CO, provided that the facility monthly average biogas usage by the biogas engines is 90% or more, based on higher heating values of fuels used (see Table III).

The engines may burn more than 10% natural gas in a digester gas fired engine, when it is necessary, if: the only alternative to limiting natural gas to 10% would be shutting down the engine and flaring more digester gas.

Concentration limits effective July 1, 2012: NO_x 11 ppmvd 15% O₂, VOC 30 ppmvd 15% O₂, CO 250 ppmvd 15% O₂.

Rule 1110.2(d)(1)(E)-Equip and maintain engine w/ air-to-fuel ratio controller with an oxygen sensor and feedback control, or equivalent.

Rule 1110.2(e)(2)- Non-Agriculture Stationary Engines

Rule 1110.2(e)(2)(A)- To be in compliance with post-2010 requirements, operator shall 1) submit modification application by July 2011. 2) Initiate construction of modification by April 1, 2012 or 60 days after PC is issued. 3) Complete construction and comply by July 1, 2012 or 120 days after PC issued. 4) Complete initial source testing by August 30, 2012 or 180 days after PC issued. Compliance is expected.

Rule 1110.2(e)(3)- Stationary Engine CEMS

Rule 1110.2(e)(3)(B)- CEMS is not required, see Rule 1110.2(f)(1)(A).

Rule 1110.2(e)(4)(A)- I&M plan has been submitted. Determination has not yet been made for this application.

Rule 1110.2(e)(5)(B)- These engines meet the Air-to-Fuel Ratio Controller requirement.

Rule 1110.2(f)(1)(A)-CEMS is not required for this engine.

Rule 1110.2(f)(1)(A)(vii)-CO CEMS shall not be required for lean-burn engines.

Rule 1110.2(f)(1)(B)- Maintain operational non-resettable totalizing time meter to determine engine elapsed operating time.

Rule 1110.2(f)(1)(C)(i)-Effective August 1, 2008 shall conduct source test for NO_x, VOC as carbon, and CO (ppmvd, 15% O₂) every two years. Or every three years if engine operated less than 2000 hours since last test. If engine has not operated within 3 months of required source test date, source test shall be conducted when operation resumes for 7 consecutive days or 15 cumulative days.

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Rule 1110.2(f)(1)(D)- I&M plan has been submitted. Determination has not yet been made for this application.

Rule 1110.2(f)(1)(E)- Maintain a monthly engine operating log that includes: (i) Total hours of operation, (ii) Types of liquid and/or type of gaseous fuel, (iii) fuel consumption (cubic feet of gas and gallons of liquid), and (iv) Cumulative hours of operation since the last source test required in (f)(1)(C).

Rule 1110.2(f)(3)- All data, logs, test reports and other information required by this rule shall be maintained for at least five years and made available for inspection.
Compliance with all applicable requirements of this Rule can be expected.

Rule 1147 NOx Reductions From Miscellaneous Sources

Rule 1147(a)- Applicability: not applicable to internal combustion engines subject to District Rule 1110.2.

Reg XIII: Rule 1303(a)- There are no increases of emissions, therefore BACT is not required.
Rule 1303(b)(1)- There are no increases of emissions, therefore modeling is not required.
Rule 1303(b)(2)- There are no increases of emissions, therefore offsets are not required.

Rule 1401: Toxic Air Contaminants

Rule 1401(d)(1)(A)- MICR less than 1.0×10^{-6} .

Rule 1401(d)(1)(C)- Cancer burden is less than 0.5.

Rule 1401(d)(2) and Rule 1401(d)(3)- HIC and HIA values are estimated to be less than 1 respectively.

Rule 1401.1: Rule 1401.1(b)- Equipment is exempt since it is located at an existing facility.

Reg. XXX: Modification of the two stationary IC engines is considered a Title V Minor permit revision under Rule 3000(b)(12), since there is no emission increase and the modification to the two engines does not result in new or additional NSPS or NESHAP requirements and will be subject to an EPA review (Rule 3003 (j)). A public notice is not required.
Compliance is expected.

Conclusions & Recommendations

The equipment is in compliance with the Rules and Regulations of the AQMD. A Permit to Construct is recommended for applications 480859 and 480864. For Permit Conditions please see Sample Permit. A revised Title V permit is recommended after EPA review.